

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 04-151822

(43)Date of publication of application : 25.05.1992

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(51)Int.Cl.

H01L 21/205

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(21)Application number : 02-276097

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(22)Date of filing : 15.10.1990

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## (54) VAPOR GROWTH METHOD FOR COMPOUND SEMICONDUCTOR ORGANIC METAL

### (57)Abstract:

**PURPOSE:** To make it possible to obtain a high-purity thin semiconductor film controlled by the thickness of a signal atomic layer by a method wherein such short-wavelength ultraviolet rays as to decompose a group V raw material are emitted on a substrate and the group V raw material in synchronization with the supply of the group V raw material.

**CONSTITUTION:** It is performed as one cycle that an organometallic compound containing a group III element and a hydride or an organic compound containing a group V element are all transported alternately by carrier gas on a heated substrate and atomic layers consisting of a III-V compound semiconductor are grown on the substrate one layer by one layer in the operation of the one cycle. At this time, such short-wavelength ultraviolet rays as to decompose a group V raw material are emitted on the substrate and the group V raw material in synchronization with the supply of the group V raw material, the group V raw material is decomposed in a vapor phase, hydrogen radicals are generated and the hydrogen radicals are made to react to organic groups on the substrate surface. Thereby, a low-carbon concentration and high-purity thin semiconductor film controlled by the thickness of the single atomic layer can be obtained.

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### LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]